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Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ़”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 5939 (1970): Single Angle Sine Tables [PGD 25:
Engineering Metrology]

“ज्ञान से एक नये भारत का निर्माण”

Satyanareshwar Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartṛhari—Nītiśākām

“Knowledge is such a treasure which cannot be stolen”



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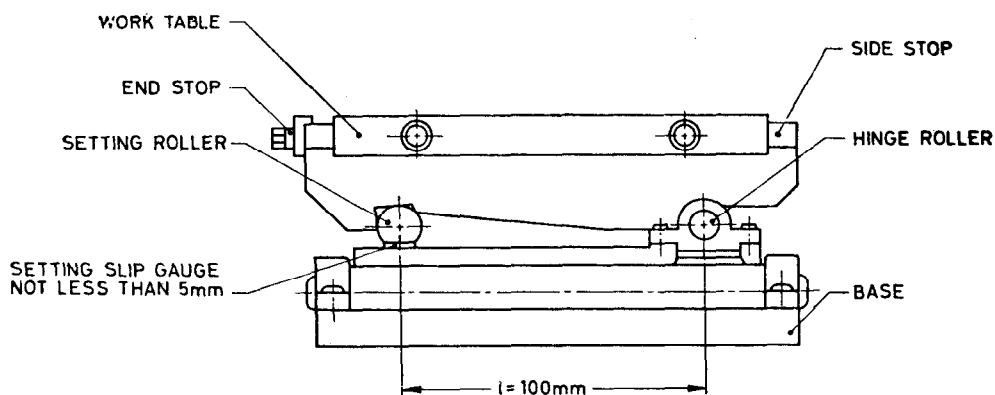
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Indian Standard

SPECIFICATION FOR
SINGLE ANGLE SINE TABLES

1. Scope—This standard covers the requirements of a sine table inclinable to 60° about a single axis with centre distances of roller 100 mm to 200 mm.

2. Essential Features—These include a base provided with a slip gauge platform and work table having a setting roller at one end and a hinge roller at the other end (see figure). At least one end and one side stop shall be provided on the work table. The height of the slip gauge platform shall be such as to require the insertion of a setting slip gauge in order to bring the upper surface of the work table parallel with the base (zero position). This size of the setting slip gauge shall be indicated but it shall not be less than 5 mm. Tapped holes or T-slots or magnetic face on the work table for clamping of workpiece shall be provided. Sine tables are used for precise checking of tapers and as a fixture for precision grinding operation.



3. Dimensions of Work Table—This shall be as specified in Table I.

TABLE I SIZES FOR WORK TABLES WITH CENTRE DISTANCES
OF ROLLERS 100 mm AND 200 mm

Size of Work Table mm	Centre Distance of Rollers mm	Slip Gauge Platform	
		<i>l</i>	Min mm
150 × 100	100		50
250 × 125	200		100

4. Accuracies—This shall be as specified in Table 2.

4.1 The setting of single angle sine table shall not differ from the nominal by more than 0.2 minute of arc over the entire range of setting.

5. Types—The following types are covered:

Type A—A single angle sine table with work table of magnetic face.

Type B—A single angle sine table with work table with T-slots.

Type C—A single angle sine table with work table with tapped holes.

TABLE 2 PERMISSIBLE DEVIATIONS

Accuracy Requirements		Permissible Deviation in μm
Slip gauge platform	Flatness	2.5
	Parallelism to the bottom surface of base	2.5
Work table	Flatness of top surface	2.5
	Parallelism to the bottom surface of base (work table is in zero position)	2.5
Work table	Flatness of at least two adjacent edges of work table	5
	Mutual squareness and squareness of edges of work table to the upper surface of work table	2.5 $\mu\text{m}/25 \text{ mm}$
	Squareness or parallelism of edges of work table to the axis of hinge rollers over the length of rollers.	13
Rollers	Circularity	2
	Cylindricity	2
	Parallelism of axes over their lengths	2
	Mean diameters	2
	Centre distance	100 mm 200 mm
End and side stops	Flatness	5
	Flatness	5
Base	Flatness	5

6. Designation—The single angle sine tables shall be designated by the type, size and the number of this standard.

Example:

Single Angle Sine Table A 250 × 125 IS : 5939

7. General Requirements

7.1 Material—Base, tables, stops, rollers are made of high quality case carburizing steel or close grained cast iron suitably heat-treated.

7.2 The working surfaces, rollers, slip gauge platform and end and side stops shall have a hardness of not less than 700 HV [see IS : 1501-1968 'Method for Vickers hardness test for steel (first revision)'] while the base shall have a hardness of not less than 650 HV (see IS : 1501-1968).

7.3 Surface Roughness—This shall be as specified in Table 3.

7.4 Rigidity—The sine table shall be sufficiently rigid so that the maximum deflection of work table under a vertical central load of 10 kg shall not exceed $3\mu\text{m}$.

7.5 The T-slots or tapped holes, if provided, shall be placed symmetrically with respect to the axes of the work table and no T-slot or tapped hole shall be provided within 30 mm from the edge of the table. The T-slots shall conform to IS : 2013-1962 'Dimensions for T-slots' and the threading of the tapped holes shall conform to IS : 4218-1967 'ISO metric screw threads'. The number and the exact positioning of the T-slots or tapped holes is left to the option of the designer.

*Since revised.

TABLE 3 SURFACE ROUGHNESS

Surfaces	Surface Roughness Ra in μ m
Cylindrical surfaces of rollers	0.2
Top surface of work table	0.2
Slip gauge platform	0.05
End and side stops (surface towards work table)	0.2

8. Packing and Storage—All surfaces of the sine table shall be protected against climatic conditions by giving a suitable corrosion preventive treatment.

9. Marking—Each sine table shall be marked with the following:

- Size of work table and centre distance of rollers,
- Setting slip gauge dimensions, and
- Manufacturer's trade name and mark.

9.1 Certification Marking—Details available with the Bureau of Indian Standards.

This standard is based on BS 3064:1959 'Sine bars and sine tables (excluding compound tables) and Gost 4046:1961 'Sine bars'.